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6 March 1981

Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 85

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WORLDWIDE AFFAIRS

VIKTOR OLIN COMMENTS ON S. AFRICAN NUCLEAR PLANS

LD201502 Moscow World Service in English 0800 GMT 20 Feb 81

[Text] Two months ago scanner satellites spotted a strange meteorological pehnomenon in the same area of the southern Atlantic where South Africa is believed to have tested a nuclear device in September 1979. Radio Moscow observer Viktor Olin comments:

In both cases American satellites registered a flash as strong as that caused by a nuclear explosion. Radioactive agents were present in the samples taken in the atmosphere in 1979. The press blossomed with speculations but the final version was this: A nuclear warhead had been tested. The warhead was launched from a South African warship and the carrier could be a cruise missile or the 155mm artillery piece South Africa had received from the American company Space Research. When the South African authorities sidestepped the issue the role of official commentator fell to Washington. In both cases Washington claimed that a nuclear arms testing was out of the question. What is more, it alleged that they were natural phenomena--say a meteroite explosion, a strong flash of lightning or simply a patch of sunlight on the water. The denial was so sweeping that anyone could see it was an attempt to draw attention away from the dangerous nuclear arms drive in South Africa, an arms drive fueled largely by the United States itself.

As soon as World War II ended, the United States and some other Western nations developed a program for scientific and technical aid to South Africa with an eye on nuclear development. As a result, a large nuclear complex emerged in the mid-'60s. It was set up in Valindaba, which in Zulu stands for something unmentionable. The chief of South Africa's nuclear research program, Dr Roux, once stated that much had been achieved. He said the achievements are due in a large measure to the training and assistance the United States willingly provided at the outset of the nuclear research program at the time. He added, some Western powers pooled efforts to introduce South African engineers into nuclear science. Before the year 1977 was out South Africa was ready to test a nuclear device in the atmosphere. A proving ground with a high steel tower in its center was set up in the Kalahari Desert. But this, however, did not take place because the Soviet Union bent every effort through diplomatic channels and the press to prevent the South African regime from carrying it out. This test being abortive, South Africa set its sights on another region, this time the high seas where the possibility of registering and identifying a test is much smaller.

The racists in South Africa admit that nuclear weapons are among the chief means for keeping them in power, pursuing a policy of discrimination and oppression towards the African population and intimidating neighbouring independent states--in other words, a policy of blatant terror in home and international affairs. A great responsibility for the fact that the regime of apartheid has got hold of nuclear arms lies on their open and secret supporters in the United States and certain other countries.

CSO: 5100

BRIEFS

REPAIR OF LOVIISA-2 GENERATOR--Loviisa (HS)--It was decided on Thursday to repair the rotor of the Loviisa-2 generator, which has caused so much concern in Finland. The defect will be corrected by the plant's Soviet manufacturer. If the defect cannot be corrected at the site in Loviisa, a spare rotor will be obtained for the plant, and the defective one will be sent to the Soviet Union for repair. A ground-contact defect appeared in the rotor of the generator of Loviisa-2's second turbine on Monday morning. Ground-contact defects have also plagued Loviisa-1's generators. The defect appeared during the final phase of the acceptance run, which lasted 14 days. The acceptance run was continued at full power to the end on Monday evening, however. During the night between Monday and Tuesday, the defective turbine was disconnected and the plant's power was reduced to about half. According to Imatra Power, correction of the rotor defect is covered automatically by the guarantee. The guarantee time is 728 days on moving parts, and the first day under the guarantee was Tuesday. Loviisa-2 is also due for maintenance of the bearings of the turbines. That should begin on the 10th [of this month]. But Loviisa-2's good turbine will be driven past that date. According to Imatra Power, maintenance of the bearings will still be carried out during January, depending on the national situation in electrical production. Imatra Power will take into account down-time at the Olkiluoto plants. Industrial Power's second plant will probably have to have a 2-day shutdown for maintenance next weekend. A regular annual overhaul or "revision" will be carried out at the plant next spring. Annual maintenance on TVO's [Industrial Power Olkiluoto's] plant number 1 is scheduled to begin on 8 May. It is estimated to last about 6 weeks. [Text] [Helsinki HELSINGIN SANOMAT in Finnish 8 Jan 81 p 25] 9611

CSO: 5100

NUCLEAR PACT WITH FRANCE STIRS URANIUM CONTROVERSY

Reprocessing Proviso

Brisbane THE COURIER-MAIL in English 8 Jan 81 p 1

[Text] Canberra.--Australia has signed a nuclear safeguards agreement with France that opens the way for direct sales of Australian uranium to that country.

The Acting Prime Minister, Mr Anthony and the Foreign Minister, Mr Street, confirmed late last night that the signing had taken place in Paris.

The agreement also contains provisions for France to reprocess Australian uranium.

The Foreign Affairs Department said late last night that the signatories had been the French Foreign Ministry secretary general, Mr de Leusse, and Australia's Ambassador to France, Mr Rowland.

The agreement is the first to incorporate a statement on reprocessing.

The department said the agreement accorded with the safeguards announced last November when the government outlined its policy on reprocessing of Australian nuclear material by other countries.

Mr Anthony and Mr Street noted in a statement that the agreement incorporated all the requirements of the government's 1977 safeguards policy.

An exchange of diplomatic notes between governments will be required to bring the agreement into force.

However the department said a transitional agreement had been concluded to enable the conversion or enrichment of Australian uranium supplied to Japan under old contracts.

This means uranium of Australian origin, supplied to Japan by France, must be transferred out of France immediately after processing.

The department said the agreement included statements on the peaceful non-explosive use of Australian uranium, the application of International Atomic Energy Agency safeguards, prior consent rights over re-transfers of Australian-supplied uranium, adequate physical protection and "fall-back safeguards."

It said that Mr Anthony and Mr Street noted France had a substantial and expanding civil nuclear program for electricity generation.

This programe, it said, incorporated commitments to advanced technology, including a fast breeder reactor program.

"Reprocessing of spent nuclear fuel is already an integral part of France's nuclear program," the statement said.

The agreement with France represents a significant step towards Australia's role as a nuclear supplier to western Europe.

It also opens the door for multimillion dollar joint ventures in Australia.

Australia has shown interest in establishing a uranium enrichment facility and such a venture would be likely to be a multi-nation undertaking.

For several years such a plan has been discussed with Japan, France and the United States.

The French agreement just signed follows more than six months of intense negotiations.

The then foreign minister, Mr Peacock, held talks with French president Giscard D'Estaing in Paris last June and stated that negotiations were being expedited.

Since then, technical missions have been in both countries.

Last night's signing is expected to draw an unfavorable response from the Federal Opposition and anti-nuclear groups.

The Opposition has heatedly opposed the government's reprocessing move and has claimed it would be impossible to monitor the activities of many countries, France in particular.

The signing is also likely to resurrect the issue of French underground testing of nuclear weapons in the Pacific, and issue which the Prime Minister, Mr Fraser, has opposed in international forums, including the United Nations. [as published]

The only two countries to abstain from opposition to underground and other testing of nuclear weapons in the United Nations in the last debate on the subject were France and China.

Enrichment Project

Canberra THE AUSTRALIAN in English 9 Jan 81 pp 1, 8 (THE FINANCIAL AUSTRALIAN)

[Article by Peter Terry]

[Text] THE giant CSR company yesterday offered its full financial backing for an $800 million project to build Australia's first uranium enrichment plant and put

the nation in the forefront of nuclear technological development.

CSR is part of a group of prestigious local companies – including BHP, Peko-Wallsend and Western Mining Corp – which has been studying the feasibility of local uranium enrichment for almost a year.

The study was commissioned by the Government, which will receive a full report this month.

CSR, which already plans to invest hundreds of millions of dollars in energy projects such as oil-from-coal, oil-from-shale and ethanol-from-sugar cane, is also involved in the mining end of the uranium industry through the Honeymoon uranium project near Lake Frome, in South Australia's north-east.

A spokesman for the sugar and resources giant told *The Australian* yesterday the uranium enrichment scheme was "an economic goer".

BHP, Peko and WMC have not yet stated their views on the uranium enrichment plant.

CSR's news came just as the Government faced a massive union revolt against its policy on uranium.

While the company was outlining details, the ACTU president, Mr Dolan, threatened to step up a campaign to stop all mining and exports of uranium.

This latest row was sparked by the Government's controversial decision to allow uranium exports to France.

The Acting Prime Minister, Mr Anthony, said the deal put Australia on the threshold of major expansion in the uranium industry.

But the ALP spokesman on urban and regional affairs, Mr Tom Uren, condemned the contract and said it would lead to Australian uranium being used in French nuclear bombs.

In Melbourne, the Victorian secretary of the powerful Amalgamated Metal Workers and Shipwrights Union, Mr John Halfpenny, vowed to achieve a ban on exports to France, describing that country as "the most irresponsible of all world nuclear powers".

GROWING MARKET

The managing director of CSR, Mr Gordon Jackson, said the group's decision was designed to capitalise on the growing market for local uranium.

The company is one of four picked by the Government to investigate the commercial viability of an enrichment project which would add hundreds of millions of dollars to the value of uranium exports.

CSR, BHP, Peko and WMC were commissioned by Canberra 12 months ago to conduct the top-level international study.

Their joint research team, known as the Uranium Enrichment Group of Australia, will make its long-awaited submission at the end of the month.

Although the Government has long made clear its political willingness to back the project, until the establishment of UEGA it lacked the commercial expertise on which to make a final judgment.

Any decision that takes Australia further up the nuclear ladder is certain to cause an even greater political uproar:

- With the Government already under attack for selling uranium to France, it can expect an even more bitter ACTU reaction to an enrichment project.
- Environmentalists are certain to oppose the plant, no matter where it is sited.
- The ALP is sure to reject it for fear, unfounded or not, that the plant will create nuclear waste and add to the world's proliferation problems.
- While enrichment has the potential to increase the value of uranium exports ten-fold, it will also bring with it radiation hazards that will require a host of new protection laws and standards.

CSR's partners in UEGA have not yet announced their decisions, but they are almost certain to support the construction of a plant.

The general manager of CSR's energy division, Mr E F Herbert, said in Sydney yesterday the enrichment plant was a "commercial goer".

He said CSR was "certainly interested in it".

"We do not see it coming to fruition until the end of the 1980s, primarily because the demand for enriched uranium can be met by established plants until then," Mr Herbert said.

"After that there will be a need for new enrichment plants, and Australia should be ready to supply."

Mr Herbert said Australia already had ensured there would be customers for its enriched uranium if and when such a plant was built.

Each new uranium export contract now contains a clause insisting that the buyer purchase 35 per cent of Australian uranium in an enriched form – if an enrichment plant is built.

Because so many long-term contracts with that clause already have been signed, there is more than enough work for the first enrichment plant.

Technology to build the plant will have to come from overseas, from either the Japanese or Europeans.

As CSR sees it, shareholdings for the project will be split between Australian interests, the foreign group providing the technology and a group drawn from the plant's main overseas customers.

Under normal guidelines for foreign investment, Australian companies would own more than 50 per cent of the plant.

CSR puts the cost of the project at between $700 million and $800 million.

But this is only for a very basic enrichment plant.

As CSR sees it, the project would be so designed that it could eventually be enlarged whereby at any time Australia could move even further up the nuclear ladder to provide finished rods for atomic power stations.

If the plant were built, customers would have to send enriched uranium to countries such as the US to have it turned into nuclear rods.

"But you have to learn to crawl before you can walk," Mr Herbert said.

Mr Anthony said uranium mining and export were now facts of life in Australia, and he expected the go-ahead for new projects in 1981.

He said the deal with France paved the way for future uranium exports and the exchange of nuclear technology.

It ensured Australia's nuclear safeguards policy requirements applied to exports to France, and was particularly significant because it was the first to incorporate a settlement on reprocessing.

Last month the Minister for Foreign Affairs, Mr Street, announced a relaxation of a safeguard policy allowing other nations to reprocess spent nuclear fuel derived from Australian-supplied uranium.

The Government is expected to conclude further safeguard agreements this year with Japan and the European Economic Community's atomic energy body, Euratom.

PLUTONIUM

Mr Anthony said more than 1200 short tonnes of uranium were exported last year, and another 37,000 short tonnes had been approved for sale over the next 15 years to Japan, West Germany, the US and Finland.

The Opposition strongly condemned the nuclear deal with France and charged that Australian uranium would be used in French nuclear weapons.

Mr Uren said the agreement was a most dangerous step towards the use of Australian uranium in nuclear weapons.

He said the Government had "failed to justify this dangerous decision to agree to the reprocessing of Australian uranium by France.

"The agreement allows France to reprocess Australian-supplied uranium and so produce plutonium from it," he said.

"Military and commercial uses of plutonium are interwoven, they cannot be separated.

"Only a few kilograms of plutonium are required to build a nuclear bomb."

Mr Uren said France had a record of "gross irresponsibility" in nuclear matters.

Mine Development

Melbourne THE AGE in English 9 Jan 81 p 3

[Article by Nigel Wilson]

[Text] CANBERRA. — The acting Prime Minister, Mr Anthony, hinted strongly yesterday that the Government would soon approve development of the Jabiluka or Koongarra uranium deposits in the Northern Territory.

The Government's decision is certain to draw criticism from conservation groups and the Labor Party.

Mr Anthony's hint was in a statement he made welcoming the signing of a nuclear safeguards agreement with France.

He said: "Uranium mining and export is now a fact of life in Australia and I expect that in 1981 the Government will be able to give the go-ahead to new uranium projects in this country.

"There are a number of projects which could be developed to maintain the momentum of Australia's advance into the world uranium market, including the Jabiluka and Koongarra deposits in the Northern Territory.

"There are also other possibilities in South Australia, Queensland and Western Australia," he said.

The ALP yesterday criticised the decision to sell uranium directly to France and to allow its conversion to plutonium. The Deputy Opposition Leader, Mr Bowen, said the move increased the chance of the world being destroyed "for the sake of a few lousy dollars."

A ban on the unapproved transfer of Australian uranium and its use in weapons production would be impossible to police.

He said that France was anxious to become the "OPEC of Europe in the sale of nuclear fuel" and the agreement would allow the diversion of Australian uranium for weapons production.

Mr Bowen said France had refused to sign the nuclear non-proliferation treaty and should therefore be barred from buying Australian uranium.

In MELBOURNE the Movement Against Uranium Mining said that the treaty with France was "probably the most irresponsible agreement Australia has made to date".

The convener of the movement, Dr Joseph Camilleri, said "France was the most irresponsible major nuclear power in the world. It continued to carry out nuclear tests in the South Pacific and was developing the neutron bomb.

Mr Anthony said in his statement: "Government policy requires that approval for development of particular projects will be given only after consideration by the Government following completion of the necessary environmental procedures, compliance with foreign investment policwy and, where appropriate, the conclusion of arrangements with the Aboriginal people."

Under those arrangements, the front runner for development approval would be the Jabiluka scheme promoted by Pancontinental. The company's environmental impact statement released in 1979 estimated the cost of developing the first stage of the project at $272 million. It has nearly reached agreement with the Aborigines on royalties.

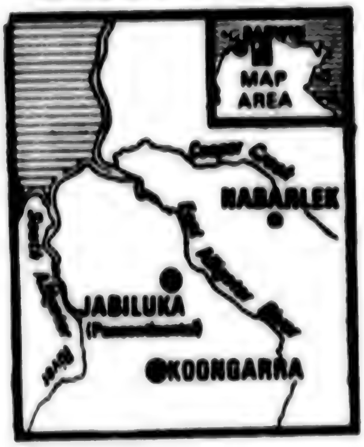
Koongarra is owned by Denison Mines of Canada and its development cost is now estimated to be at least $150 million. Its owners in January 1979, the Canadian Nooranda group, put the figure at $80 million.

Under the Government's uranium policy, Australian equity in each project has to be 75 per cent.

The safeguards agreement will be tabled in Parliament when the new session begins in February.

It maintains that reprocessing of Australian-origin nuclear material shall be done under safeguards laid down by the International Atomic Energy Agency for energy use and management of materials contained in spent fuel.

The French Parliament has not agreed to the inspection by the agency of its civil nuclear power facilities but Australian officials expect this to be done soon.



The agreement notes that plutonium separated from other nuclear wastes "shall be stored and used, under agency safeguards, in accordance with the nuclear fuel cycle programme". It does not specify who is responsible for storing the plutonium, which is the basic material for nuclear weapons.

There is also a transitional agreement covering the processing of Australian-origin uranium in France for material supplied by Australian companies to Japan. In practice this means 478 short tonnes of uranium extracted from Queensland Mines from the Nabarlek deposit and supplied to the Shikoku Electric Power Company.

Union Opposition

Melbourne THE AGE in English 9 Jan 81 p 3

[Article by Michael Gordon]

[Text] The ACTU executive is likely to consider action aimed at preventing the sale of Australian uranium to France at its meeting next month.

A prominent Left-wing union leader, Mr John Halfpenny, said yesterday that he was confident that unions would support the ACTU policy against uranium to stop shipments.

He described the decision of the Federal Government to sell uranium to France as "the most irresponsible in a long line of irresponsible decisions on uranium and nuclear issues".

He said the decision to sign a nuclear safe-guards agreement with France shattered all the "promises and undertakings" of the Government on nuclear safeguards. France had proved itself to be the most irresponsible of nuclear powers and had been prepared to sell nuclear technology to "any unprincipled buyers", he said.

It had been the only nuclear power to test nuclear weapons away from its shores in recent years, he said.

The secretary of the ACTU, Mr Peter Nolan, last night said that if Mr Halfpenny's union, the Amalgamated Metal Workers and Shipwrights Union, asked that the issue be placed on the executive agenda, it would be considered at the meeting in Perth.

Mr Halfpenny said while there had been differences of opinion within the union movement on the question of uranium mining, there would be a "much more unanimous" stand on selling uranium to France.

He predicted a campaign which would be reminiscent of ACTU action against French nuclear testing in the Pacific. He also believed the Pacific Trade Union Forum would take an active role in opposing shipments from Australia to France.

The acting Prime Minister, Mr Anthony, and the Foreign Minister, Mr Street, announced that on Wednesday France had become the sixth country to sign a nuclear safeguards agreement with Australia.

Delayed CSR Decision

Sydney THE SYDNEY MORNING HERALD in English 10 Jan 81 p 32

[Text] A spokesman for CSR Ltd said yesterday that the group had not decided to back an $800 million uranium enrichment project.

He was commenting on a newspaper report which stated that CSR had offeed its financial backing for a uranium enichment scheme. [as published]

CSR is one of four companies commissioned by the Commonwealth Government to make a preliminary study of the feasibility of uranium enrichment in Australia.

The spokesman said the Government would shortly consider a report covering the study but he declined to comment on the contents of the report.

He said: "CSR has not taken any policy decisions on uranium enrichment--there is no decision by CSR beyond willingness to participate in studies of uranium enrichment."

IAEA Monitoring

Canberra THE FINANCIAL AUSTRALIAN in English 12 Jan 81 pp 1, 3

[Article by Peter Terry]

[Text] Any move by Australia to build a uranium enrichment plant will spark a detailed investigation by the International Atomic Energy Agency to ensure the plant cannot be used to produce weapon-grade nuclear material.

The need for the investigation was confirmed yesterday by the Federal Government's Australian Safeguards Office, which acts as the liaison with the IAEA in its watchdog role under the Nuclear Non-Proliferation Treaty.

Although commercial enrichment plants cannot produce weapon-grade material, it is possible in theory to adapt them so they can.

It is also feasible, as far as the IAEA is concerned, to disguise a commercial plant so it can produce such material from the start.

It is because of this possibility, no matter how remote, that the IAEA will have to inspect all designs for the plant and have inspectors on site to watch all stages on construction.

The Federal Government is deciding whether to permit a uranium enrichment industry to be established.

Last Thursday the giant CSR group announced it viewed the project as a "commercial goer".

CSR, with BNP, Peko Wallsend and Western Mining Corp, were commissioned by the Federal Government a year ago to conduct a feasibility study.

Inspections

It has since been learnt that all four companies have told the Government they believe the project is commercially viable.

The initial plant would cost about $800 million and, subject to further detailed construction study, could be in operation by the end of the 1980s.

The additional study will depend on a decision from the Federal Government.

According to the Australian Safeguards Office, any move into enrichment would be accompanied by a big build up in inspections by the IAEA.

IAEA officials now visit Australia about four times a year to inspect all nuclear materials handled by the Australian Atomic Energy Commission at Lucas Heights in Sydney.

An enrichment plant might require the agency to establish a permanent inspectorate in Australia.

Such strict IAEA inspections are not required for the uranium mining industry, although it is provided with full and detailed reports on the destination of all export yellowcake.

This enables the IAEA to keep tabs on all such material once it has left the country.

Standard commercial plants do not enrich uranium more than about three per cent. To make a nuclear weapon usually requires the material enriched by at least 90 per cent.

The enthusiasm shown by CSR for the plant has brought an immediate response from the Western Australian Premier, Sir Charles Court, who rates his State as a contender for an enrichment plant.

He welcomed CSR's commitment to the project and said WA was well placed to be the location for the industry.

Sir Charles said the State had its own supplies of uranium, and there would be no difficulty finding a suitable location.

The State also had easy access to overseas markets for uranium.

"We are a high energy society and we understand that ample supplies of energy are not a matter of luxury but life and death," Sir Charles said.

The enrichment industry would be of benefit to the State in its own right, but it also had the advantage of creating the need for sophisticated manufacturing, which would open great employment opportunities.

The industry was consistent with Government policies to obtain the employment opportunities and added value that went with the processing of minerals to metals.

All States, with the exception of NSW, have shown interest in having an enrichment industry established locally.

The SA Government, involved in negotiations to build an enrichment plant for more than five years, says all systems are go to launch the project.

A spokesman for the Premier, Mr Tonkin, said all the Government was waiting for was an all-clear from the Federal Government.

He said the State Government's Uranium Enrichment Committee fully supports a proposal by huge European consortium, Urenco-Centec, to build an enrichment plant estimated to cost about $500 million.

A delegation from the British, West German and Dutch consortium, led by the under-secretary for nuclear energy in the UK Department of Energy, Mr Ivor Manly, held talks only weeks ago with the SA Government in Adelaide.

Urenco-Centec uses the so-called gas-centrifuge process, which is considered the most advanced technology in the industry.

Mr Tonkin has sought Federal Government support for SA to be the first to set up an enrichment industry at the start of the next decade.

But until the Uranium Enrichment Group of Australia — the consortium comprising BHP, CSR, Peko-Wallsend and Western Mining Corp — complete their feasibility study, they will have to bide their time with other States eagerly awaiting results.

The Queensland Premier, Mr Bjelke-Petersen, said on Friday his Government would be happy for a uranium enrichment plant to be built in the State.

FRENCH PROPOSALS

"We wouldn't object to it at all. There are so many of them everywhere around the world.

"Communist countries utilise them to their utmost advantage."

Mr Bjelke-Petersen said there were any number of suitable sites for a enrichment plant in Queensland.

While there had been inquiries of a general nature about such a plant from overseas there was nothing concrete to talk about at the moment, he said.

"We would be happy to have discussions with anyone who wants to come to Queensland with this kind of proposal."

The State Government is keeping the door open to French proposals to build a $300 million enrichment plant in North Queensland.

State Cabinet was last month given a confidential report on a secret inspection by France's Industry Minister, Mr Andre Giraud, on possible plant sites in North Queensland.

The French mining company, Minatome, plans to begin mining uranium ore at Ben Lomond, 50km west of Townsville next year.

Minatome, a wholly-owned French company, has applied for a second lease at Ben Lomond covering 2035ha.

The Australian Telecommunication Employees Association has singled out Minatome as a target for industrial action because of what it describes as France's "sad record of international citizenship".

In Melbourne, the Victorian secretary of the Amalgamated Metal Workers and Shipwrights Union, Mr John Halfpenny said the CSR offer was an "inevitable development".

Efforts would have to be intensified, he said, to "stop Australia plunging headlong into a nuclear industry."

The convenor of the Movement Against Uranium Mining, Dr Joe Camilleri, said he believed the economics of the uranium enrichment plant project were against it.

Sufficiently enriched uranium provided another avenue for manufacture of nuclear weapons, and, said Dr Camilleri: "This is another area in which people are worried."

European costings indicated a plant in Australia was likely to cost $2000 million, he said.

"Over the last four or five years there has been a fairly dramatic downturn in the demand for uranium and enriched uranium. It is hard to see sufficient markets for an Australian plant," he said.

The Victorian Premier, Mr Hamer, was not available for comment yesterday. A spokesman said there had been no State Government statements on uranium enrichment.

Editorial Comment

Canberra THE AUSTRALIAN in English 13 Jan 81 p 6

[Text] THE proposal by a consortium of high-ranking Australian mining and energy companies to build a uranium enrichment plant in Australia by the end of this decade will produce many useful results. Not the least of them will be the immediate one of promoting informed debate on whether we should have such a plant. So far, argument on this matter has taken place in an emotive vacuum at about the intellectual level of whether wife-beating is a sport or a hobby. Now, thanks to initial studies prepared for the Federal Government by CSR, BHP, Peko-Wallsend and Western Mining, we know it might be possible to build a viable plant for about $800 million to start in the late 1980s.

A positive, though long-term, view of the project, as seen by CSR, was outlined exclusively in *The Australian* on Friday. The next step is for the Government to consider the report and make a decision on whether the project should go ahead. There seems no reason why it should not, unless better arguments against it than those produced so far emerge from the national debate which is sure to occur.

There will be ample time for this debate — the plant will not come into production until 1988 or 1989 — and it is to be hoped that all concerned will take part in it constructively and with open, not shut, minds. The Australian Labor Party, some unions and many of those labelled conservationists or environmentalists tend to give a violent, knee-jerk reaction at the mere mention of uranium mining and export. It will be a pity if they adopt the same don't-want-to-know attitude to uranium enrichment.

The practical, economic argument in favor of Australia enriching its uranium before export is the same argument which should be applied to all our vast mineral resources: we should do all we can to avoid being simply a quarry for other nations to pillage. We should do as much refining work as possible before export — reaping greater returns from our resources and contributing greatly to our own employment and industrialisation.

The realistic argument in support of the plant is that our uranium will be refined, anyway, if we export it in yellowcake form, so we contribute nothing toward creating a nuclear-free world by not refining it ourselves. And the same sort of argument applies to uranium mining and exports generally: if we do not develop our deposits, the world will get its supplies elsewhere. We are not the only suppliers — although we have a large share of the world's known, easily-accessible, high grade deposits. And many countries in the world need nuclear power, are using it, will use more of it — and will get uranium to generate it whether Australia mines it or not.

This latter point is ignored by the anti-nuclear lobby, which promotes the impression that nuclear power generation is new and dangerously untried when, in fact, it has been in operation for many years and its use will grow. Indeed, without it some developed countries will founder and many under-developed countries will not get the chance to advance. Australia would be on indefensible ethical ground should it deny its uranium to countries which need it to provide power to create better living standards for their people.

The building of a uranium enrichment plant in Australia will create problems and will require a host of new protection laws and standards. But these should not be beyond our powers — and, indeed, they are burdens we should accept. If we are prepared to export yellowcake for others to refine, with the radiation hazards and waste disposal problems involved, then we should, ethically, be prepared to deal with our own waste.

These are some of the points for debate. The Government will be well-advised to launch that debate as soon as possible — and make its decision quickly . . . and firmly.

CSO: 5100

NUCLEAR SAFEGUARDS PACT WITH JAPAN ANTICIPATED

Sydney THE SYDNEY MORNING HERALD in English 17 Jan 81 p 34

[Article by Hamish McDonald]

[Text] Tokyo, Friday.--The Japanese Government is expected to indicate to senior Australian ministers next week that it sees the way clear for a nuclear safeguards agreement covering Australian uranium exports to be signed this year.

Japanese official sources said today the revised policy on advanced approval of nuclear reprocessing announced by the Foreign Minister, Mr Street, on November 27 last year dealt with the main cause of Japanese reservations.

The new policy allows for advanced approval for reprocessing of spent nuclear fuel to be done on a "program" basis instead of case by case.

Japanese Government negotiators had earlier been concerned that case by case approval introduced too much uncertainty into their long-range plans for developing a complete nuclear fuel cycle.

Used fuel rods from nuclear power stations can be reprocessed to extract plutonium to fuel the new fast-breeder and advanced thermal reactors now under development in Japan and other industrial countries.

Control of this plutonium, which can be used to make nuclear weapons, is a vital part of the safeguards over nuclear fuel transfers, for both bilateral arrangements and international regimes, by the International Atomic Agency.

Japanese sources said today previous Japan-Australia negotiations on safeguards over the past two years had pinpointed differences very precisely, and that officials would quickly be able to determine how the new Australian policy will narrow these differences.

Five senior Australian ministers--the Deputy Prime Ministers, Mr Anthony, the Foreign Ministers, Mr Street, the Minister for Industry and Commerce, Sir Phillip Lynch, the Minister for National Development and Energy, Senator Carrick and the Minister for Primary Industry, Mr Nixon--will hold two days of talks from next Wednesday with their Japanese counterparts as part of a regular series of meetings.

The nuclear safeguards issue will be one of the major topics. The Japanese side is expected to express its hope for an early agreement following informal discussions to be held in February.

The changed Australian policy has already been explained in detail by a part of Australian officials who came to Tokyo early last month.

The Japanese Government is also expected to announce at the talks that it will advance studies on a possible joint uranium enrichment plant in Australia.

It will tell the Australian ministers that leading Japanese companies involved in nuclear engineering will shortly form a consortium to join with four Australian mining companies to make further feasibility studies.

The first stage of a feasibility study has already been completed by government officials. Last year the Australian Government turned over its side of the program to the mining company consortium, the Uranium Enrichment Group of Australia.

Wednesday's ministerial meeting will also see the Japanese Government putting a case to Australia on other key energy and industrial matters.

CSO: 5100

VETS CALL FOR DEVELOPMENT OF NUCLEAR CAPABILITY

Canberra THE AUSTRALIAN in English 13 Jan 81 p 3

[Article by Geoff Sorby]

[Text] **THE Returned Services League has recommended the development of a nuclear defence capability.**

The league also recommended the reintroduction of national service so that the Army could be rapidly expanded to a force of 100,000 in an emergency.

The acquisition of nuclear weaponry know-how was part of the defence strategy outlined in the RSL's 1981 Defence Paper released yesterday.

The president of the RSL, Sir William Keys, said greater self-sufficiency in defence and in national development was a matter of urgent priority.

"This is essential not only in Australia's own national interests but to enable us to make a greater contribution to regional and world stability," he said.

Major points advocated in the defence paper included:

● An ongoing program for the replacement of equipment.

Certain decisions had been made but the span between orders and delivery could be as much as 10 years.

This meant that early decisions had to be made and implemented on an ongoing basis and not be subject to changing political attitudes.

● Upgrading of the three services to increase the reconnaissance and strike capability of the Navy and Air Force, and the size of the regular Army to a division supported by an adequate reserve.

PREPAREDNESS

The aim must be to enable the rapid expansion of the Army to a force of 100,000 in an emergency.

This, in the league's view, would not be possible without some form of National Service.

● The co-ordination of industrial capability to provide indigenous back-up to defence services.

● An adequate intelligence surveillance system.

Supporting defence preparedness must be a competent intelligence and surveillance system, formed as a special surveillance command responsible to the Chief of the Defence Force Staff.

● The development of a nuclear capability to provide a nuclear alternative should this be needed.

● The further development of national road, rail and sea transport facilities and defence establishments in the interests of strategic mobility.

Sir William said the league regarded an upgraded defence capability as an essential support to foreign policy initiatives, especially in the area of strategic interest.

"Without such support our foreign policy alternatives are limited and the national will and voice so much the weaker," he said.

"The league further emphasises that improved defence arrangements cannot be effective without a national awareness and a demonstrable national will.

"It remains one of the most vital functions of government to promote this awareness in the community."

CSO: 5100

URANIUM PART OF SEABED FIND OFF NSW COASTLINE

Canberra THE FINANCIAL AUSTRALIAN in English 7 Jan 81 p 2

[Article by Nicholas Rothwell]

[Text] The first discovery of phosphate--the substance used in fertilisers--being created on the seabed has been reported on the NSW coastline between Evans Head and Port Macquarie.

Two scientists at the Flinders University, Drs. Gordon O'Brien and H. Veeh made the find, which will be of key importance to nations without land deposits of phosphate fertiliser.

Australia depends for its phosphate on three offshore sources--Christmas Island, Ocean Island and Nauru.

But they are rapidly being depleted, and sooner or later will be used up, Dr Veeh said yesterday.

"Our discovery is important not because Australia needs a new commercial source of phosphate, but because it is the first ever evidence of phosphate-containing material actually being formed," he said.

Phosphate from Nauru are still being supplied to local manufacturers, but Ocean Island supplies have dried up.

The giant Duchess mine in Queensland, controlled by Western Mining Corp, is being reopened and will meet industry needs until the turn of the century.

Officials of WMC yesterday would not comment on the discovery before reviewing the technical details and assessing its potential.

An Industry Advisory Council official declined to comment on the find except to say government views on it were immaterial since any commercial exploitation would have to be financed by private industry.

Uranium

Dr Veeh stressed the find was not commercially important except for countries without nearby phosphate supplies.

"Some users of phosphate may find it cheaper to mine seabed deposits than import the product from distant sources," he said.

The deposits off Port Macquarie also contain large amounts of uranium which could be profitably mined.

The discovery of phosphate nodules on the seabed of the Tasman will open the way to future attempts to explore and identify large underwater reserves of phosphate, Dr Veeh said.

"Commercial mining of undersea phosphate will take place in the near future.

"Other countries will probably find the idea very attractive as surface phosphate supplies dwindle--Mexico will probably mine offshore phosphate and New Zealand could also use underwater reserves," he said.

The discovery by the Flinders University team was made on the edge of the continental shelf.

There have been reports of underwater phosphate finds associated with completely different coastal conditions, but the discovery off the NSW coast was unusual because the area is stable.

The coupling of radioactive nodules with the phosphate makes the site an attractive commerical prospect for mineral-poor countries and is likely to encourage a search for undersea deposits of phosphate in regions previously thought barren.

CSO: 5100

ADDITIONAL RICH URANIUM FIND REPORTED AT PANDANUS

Sydney THE SYDNEY MORNING HERALD in English 15 Jan 81 p 13

[Article by Stephen Bartholomeusz]

[Text] MELBOURNE. — Bridge Oli has reported some further encouraging uranium and gold values at its Pandanus Creek prospect in the Northern Territory.

Results from two drillholes on the prospect showed uranium values ranging from 1.11 pounds of uranium oxide a long tonne to 64.72 pounds a tonne.

Gold values ranged between 3 and 150 grammes a tonne and Bridge also reported silver values between 0.8 and 4 grammes a tonne.

Best grades were recovered from a 3 metre interval between 115 metres and 118 metres at the prospect, near the Queensland border. Pandanus Creek is 400 km north-west of Mount Isa.

Bridge is funding exploration of the prospect to earn a 25 per cent interest, with an option to earn another 25 per cent by providing further funds. Other companies with a stake in the prospect are Kratos Uranium, Minatome Australia and Wyoming Mineral Corporation.

Before the Bridge report was issued yesterday, Kratos was queried by the Sydney Stock Exchange over recent share price rises. Kratos contributing shares have risen from $1.10 last Friday to $1.85 and its fully paid scrip has jumped from $1.65 to $2.20.

The exchange has requested a reply from Kratos by 10 am today.

Bridge said the uranium samples reported yesterday were taken from seven of the last eight holes drilled in the 1980 program.

The latest report follows the announcement last month of results from four earlier drill holes which showed uranium values between 1.32 pounds and 3.96 pounds a tonne, with one sample assaying 10 grammes of gold and one gramme of silver a tonne.

Results from the latest drilling compare favourably with grades reported by several established uranium deposits and mines.

Mary Kathleen Uranium, Australia's first mine, has an average grade of about 2.5 pounds a tonne, and Australia's richest uranium deposit, Nabarlek, has an average grade of about 52 pounds a tonne.

The giant Roxby Downs copper-uranium-gold prospect in South Australia has an average grade of about one pound a tonne uranium, but contains a vast amount of ore.

Bridge's best results came from drill hole WPD 60. Between 115 and 116 metres the hole assayed 2.8 pounds a tonne uranium, with no gold or silver values. Between 116 and 117 metres it returned values of 23.77 pounds a tonne uranium, 20 grammes a tonne gold and 1 gramme a tonne silver. Between 117 and 118 metres it intersected 64.72 pounds a tonne uranium, 10 grammes a tonne gold and 4 grammes a tonne silver.

Between 118 and 119 metres the hole assayed 14.85 pounds a tonne uranium, 3 grammes a tonne gold and 4.4 grammes a tonne silver, but directors said the results indicated values below 118 metres were due to contamination during drilling. It was considered significant mineralisation occurred essentially in the 115 to 118 metres interval, they said.

The mineralisation consists of pitchblende associated with pyrite and galena as well as gold and silver.

CSO: 5100

BRIEFS

URANIUM WORKERS--Perth.--Recent events had shown that labour would be readily available for the export of uranium from Australia, the Opposition spokesman on industrial relations and employment, Mr Hawke, said yesterday. Darwin waterside workers had voted by a margin of two or three to handle yellowcake, he said. "The evidence shows that labour will be available to construct, mine and remove the product." Mr Hawke, speaking at the University of Western Australia, said he hoped that there would be "very serious" discussions within the community and political parties on uranium mining in Australia and on waste disposal. [Text] [Sydney THE SYDNEY MORNING HERALD in English 16 Jan 81 p 10]

CSO: 5100

AEC CHAIRMAN URGES MORE NUCLEAR ENERGY EXPLOITATION

Speech to Engineers

Madras THE HINDU in English 31 Jan 81 p 6

[Text]

BOMBAY Jan. 30.

Dr Homi N Sethna, Chairman, Atomic Energy Commission said here today that the exploitation of nuclear energy was almost a must for meeting the world's energy demands.

Dr. Sethna, who was delivering the 11th Bhabha Memorial Lecture at the Institution of Electronics and Telecommunication Engineers here, said that the contribution of nuclear energy for electric power generation was increasing steadily, and was around 20 per cent level in some countries like Switzerland, France and Japan. The U.S. and U.K. were close followers.

As regards use of solar energy, he pointed out that significant breakthroughs were necessary before it could be made economical, especially for the generation of electric power.

Dr. Sethna said that solar energy, and geothermal energy were abundant, but their tapping was difficult and expensive due to the dilute form in which these were available. One could not, however, rule out the possibilities of breakthroughs which might make these sources commercially exploitable.

Nuclear energy sources were highly concentrated sources of energy and fission reactor systems had been very well developed for commercial power production. It was also expected that the work being done on fusion would result in practical reactor systems in the early part of the next century. This might be the permanent solution to all energy problems of the future.

Dr. Sethna said that several conclusions had been arrived at, which, if practised, would stretch the use of fossil energy resources over a considerably longer period.

For example, an average American utilised 41.5 per cent of his energy requirement for his car. A doubling of the efficiency of his car, both by reduction in weight and advanced design, would save a considerable amount of fuel for his country.

Similarly, if a consensus was created in the public mind to employ mass transportation system in preference to individual vehicles, a large quantity of fuel could be saved.

A study in Germany had revealed that in transporting a single person over 100 km, the relative energy consumption of an automobile was four times that of a bus, twice that of a street car, 1.5 times that of a train, and nearly two thirds of that of an airplane. Thus bus travel appeared to be least energy consumption for human transportation.

One should keep in mind that one of the prime factors that dictated energy consumption was the lifestyle. A ton of aluminium needed 60 million BTUS for its production, whereas the same quantity of glass could be produced by the expenditure of only 17.5 million BTUS. Thus if, instead of throw away aluminium cans, glass containers were used, which can easily be recycled, a substantial energy saving could result.

Another apparent area where energy consumption could be reduced was the field of illumination. The tungsten filament lamp, which was used extensively in all house-holds as well as decorative lighting, had an efficiency of 5 per cent, as compared to more than 60 per cent of gallium arsenide light-emitting diodes. If a breakthrough to reduce costs of this semiconductor device and to improve the spectrum were acheived, one could easily imagine the savings in energy.

UNI reports:

"Contrary to popular belief, the occupational risk of a nuclear reactor is much lower than the one for many familiar industries", Dr. Sethna said hitting back at the critics, who demanded a ban on nuclear reactors.

Nuclear power stations had an extensive built in safety systems to prevent casualties in the event of an accident. "There is not even one documented fatality from the nuclear industry, because the volume of fuel handled is very small", he pointed out.

Editorial Urges Self-Reliance

Madras THE HINDU in English 31 Jan 81 p 8

[Text]

THE CHAIRMAN OF the Atomic Energy Commission, Dr. Homi Sethna, has poured cold water on the vague hopes raised by some scientists on the feasibility, economics and other aspects of unconventional sources of energy like tidal and wind power, solar heat and engines using the temperature difference between deep sea and surface water. Techniques in these fields will take time to mature. India has never been significantly dependent on oil for the generation of electricity. The short-term approach naturally will have to be to concentrate on coal-fired thermal stations which are comparatively cheap in terms of capital investment and can be speedily erected, followed by the implementation of hydroelectric projects. But a new thrust to the development of nuclear plants is essential in a country in which all regions are not endowed with proximity to coal or access to water flow. The conclusion of Dr. Sethna, in his address yesterday in Bombay to the Institute of Electronic and Telecommunication Engineers, is: "Power from nuclear heat is the best source of energy for a permanent solution." For some time past, especially during the period of the Janata regime, nuclear scientists justifiably felt they were left out on a limb, frustrated because the Government appeared to have given a back seat to technological development. Even without the studied neglect by those in authority in New Delhi, the nuclear scientists had been hard put to it to come anywhere near hitting targets to which the aims had been set more than a decade ago. No nuclear power plant has come up since 1973, and the present installations add up to a third of the late Dr. Vikram Sarabhai's programme for a capacity of 2,700 mw by 1980. Apart from the Kalpakkam unit near Madras and Narora in Uttar Pradesh, no other new project is even on the drawing board.

The return of Dr. Raja Ramanna to the Bhabha Atomic Research Centre is an indication of the earnest of the Government to try and put the nuclear development programme back on the rails. The earlier plans were no doubt upset by the confusion over the American supplies of enriched uranium fuel for Tarapur and the consequences of the Canadians reneging on the arrangement to supply heavy water to the Rana Pratapsagar station. The Soviet supplies to the Rajasthan plant are also hemmed in by "safeguard" clauses and a smooth course is possible only if India becomes selfreliant in heavy water to cool reactors using natural uranium. The slide-back is vividly illustrated by the Prime Minister's statement in Parliament that the two units at Kalpakkam are expected to be commissioned in 1982 and 1984; the original schedule was to complete the two stages in 1973 and 1976. While fast breeder reactors using thorium, of which there are abundant domestic reserves, may prove to be the most efficient electricity producers in the distant future, the plans for the next two decades will have to be for the construction of heavy water moderated uranium plants. Apart from the old small plant at Nangal, there are four heavy water plants — at Baroda, Kota,Talcher and Tuticorin. These add up to a capacity of 300 tonnes a year. The working group on energy policy, in its report late in 1979, has suggested that the country aim at an installed nuclear capacity of 8,000-10,000 mw in the total of 100,000 mw of all types of power houses. The cumulative demand for heavy water would then be more than 10,000 tonnes for the initial charge. This is a big challenge. So also the ambitions of a tenfold increase in the capacity of nuclear installations. All this is a test for selfreliant technological growth in the face of the advanced countries ganging up to stifle the peaceful nuclear aspirations of the developing countries which choose not to sign on the dotted line.

CSO: 5100

PLAN FOR REPROCESSING SPENT FUEL EXPLAINED

New Delhi PATRIOT in English 6 Feb 81 p 6

[Text] Bombay, Feb 5 (UNI).

India is working on a plan to reprocess the spent fuel from the Tarapur and Rajasthan atomic power stations for coversion into plutonium. [as published]

According to Mr Vinay Mechony, a top nuclear scientist at the Bhabha Atomic Research Centre (BARC) here, the plutonium thus derived can "possibly be considered for use as an alternative fuel "for Tarapur even if the United States stops supplying enriched uranium, the main fuel". [as published]

This would enable the Tarapur station to stay in operation if the US breaches the bilateral agreement with India for the supply of enriched uranium, Mr Mechony told UNI today.

The storage pond at Tarapur was getting full and building an additional storage would be expensive, Mr Mechony said.

"It will cost a few crores of rupees, which we do not want to spend unnecessarily when we have a reprocessing plant lying idle" he said.

But, if the spent fuel continued to pile up in the existing storage pond, the reactors would have to be shut down as refuelling could not be carried out with the pond full, and there was "no other way out" but to reprocess the spent fuel.

The transportation of spent nuclear fuel from the Rajasthan reactor to the reprocessing plant at Tarapur was "just beginning".

Dispelling the US journalists' apprehension that the plutonium derived after reprocessing spent nuclear fuel might contain weapon-grade material, he asserted, "it would be only 'high burn-up' plutonium and, therefore, could not be considered as weapon-grade material."

Declaring that India did not want to make nuclear weapons, Mr Mechony said, the reprocessing plan was part of the programme to develop a fast-breeder reactor system, for which plutonium was a suitable material.

The plutonium obtained from the spent fuel from the first-generation thermal reactors would be used in the fast-breeder reactors now under construction at Kalpakkam in Tamilnadu. But he clarified that, "no hurried decision will be taken to reprocess the spent fuel from Tarapur" as long as the US stuck to its contractual obligation to supply enriched uranium.

CSO: 5100

TRIBAL DEATHS FROM RADIOACTIVE ROCKS RUMORED

New Delhi PATRIOT in English 16 Feb 81 p 1

[Text] Hyderabad, Jan 5 (UNI)--An expert team is on its way to Anantgiri forests in Visakhapatnam district to verify reports that 25 tribals there have died due to exposure to radioactive rocks.

The team, sent by the Atomic Minerals Division of the Department of Atomic Energy and headed by a geologist, is equipped with instruments to detect radioactivity.

The reports had said radioactive rocks were present in some old granite mines. But the initial reaction of officers of the National Geophysical Research Institute (NGRI), Atomic Minerals Division, and the State Department of Minerals and Geology, has been one of disbelief.

Chief of NGRI N S Balakrishna told UNI "We know there are old granite mines in Anantagiri hills, but they are not likely to have such concentration of radioactivity".

Dr C R Udas, director of the Atomic Minerals Division, said "uranium would have to be of 85 per cent purity to cause death by casual exposure. If such deposits exist in Visakhapatnam district, it would be a fantastic discovery".

State director of Mines and Geology S R Sharma said he had received reports of deaths but it had yet to be determined whether the deaths were caused by radioactivity or something else.

The team has been sent on instruction from Atomic Energy Commission chairman H N Sethna.

CSO: 5100

INDIA

NUCLEAR ACCORD WITH UNITED STATES TERMINATED

BK221514 Delhi INDIAN EXPRESS in English 6 Feb 81 p 6

[Editorial: "Nuclear Fuel"]

[Text] India's reported suggestion to the U.S. Government to terminate the bilateral agreement on fuel supplies for Tarapur reactors is a judicious move in the existing circumstances. Tarapur fuel supplies have been a major irritant in Indo-U.S. relations for some time because the U.S. has tried to impose extraneous conditions for honouring its contractual obligations. It is out of question for India to accept the demand that it sign a discriminatory non-proliferation treaty and open all its nuclear installations to international inspection. India has shown considerable restraint and patience in waiting for the uncertain American supplies as long as there was a slight chance of their coming through. Now obviously that is a forlorn hope, considering the views of the Reagan administration. The only sensible course is to end the uncertainty by having the agreement annulled.

The U.S. Government, however, may not accept India's suggestion because it will free India to reprocess the spent fuel from the Tarapur reactors. The Americans apparently want to have their cake and eat it as well. Whatever be the problems on the U.S. side, the government must make it clear that if the U.S. does not supply the needed fuel on time, India will be free to exploit all options open to it for running the Tarapur reactors. This can be done by using a mixed oxide fuel using plutonium recovered from the spent fuel. According to American correspondents, this is exactly what the Department of Atomic Energy [as published] intends to do. Reassuring as the news is, it is outrageous that the Indian people should come to know of such a vital decision through the foreign press. This is particularly galling because Indian newsmen have repeatedly queried DAE officials on their contingency plans to meet Tarapur's fuel problems, only to get vague and elusive replies. The decision to start reprocessing was long overdue. The first plant for the purpose has been ready for two years. The stakes involved in recovering plutonium can be appreciated from the fact that it is the crucial energising fuel needed for our future breeder reactors, which alone promise a viable long-term atomic energy option for India.

CSO: 5100

INDIA

NEW TECHNIQUES USED IN BUILDING NUCLEAR REACTOR

New Delhi PATRIOT in English 3 Feb 81 p 5

[Text]

THE Bhabha Atomic Research Centre (BARC), Trombay has designed and developed the first fully indigenous nuclear reactor vessel — called Calandria, reports UNI.

The Calandria is the heart of the nuclear reactor built for R-5 (research) project at the BARC. It was designed by its reactor engineering division and fabricated by the centre's in-house manufacturing facility, the central workshops.

All other reactor vessels fabricated in India so far (for power reactors) have been based on Candu concept.

The R-5 reactor is a 100 MW thermal research reactor which is in an advanced stage of construction at Trombay.

Many new techniques have gone into the Calandria. One such technique involves the use of partial vacuum electron beam technology for welding the fuel cups to the plenum plates. Without this technique, the precision requirement could not have been met. This is probably the first time in the world, that that such a technique has been used on a big component that too in the nuclear field according to BARC.

The Calandria is fabricated from extra low carbon stainless steel plates ranging in thickness from 10 mm to 65 mm. It consists of a triangular inlet plenum with 144 fuel cups and a top plenum with a corresponding number of lattice positions, the main shell is about 3780 mm in diameter. The height of the Calandria is 6700 mm.

By using new techniques and special fixtures and toolings, the central workshops were able to complete the first indigenous reactor ahead of time.

CSO: 5100

BRIEFS

URANIUM ADEQUATE FOR PROGRAM--New Delhi, 19 Feb (AFP)--Adequate proven reserves of uranium and other raw materials exist in India to support its nuclear power program currently envisaged, it was stated in Parliament today. Junior Minister for Science and Technology C.P.N. Singh, who stated this in the upper house in a written reply, however, said that it would not be in the public interest to disclose the details of production. The minister informed the house a number of uranium occurrences had come to light in central Indian Madhya Pradesh. Survey and exploration were taken up and plans for exploiting this deposit were under technical scrutiny, he added. [Text] [BK191716 Hong Kong AFP in English 1710 GMT 19 Feb 81]

URANIUM USED IN POWERPLANT--India will use natural uranium as fuel in its future atomic powerplants. PTI, quoting official sources, reports that proven reserves of natural uranium in the country will be adequate for the purpose. Indigenous fuel fabrication facilities are being suitably augmented in the country for meeting the increasing demand of such fuel. The center has already under consideration a proposal to set up an atomic power station of 470 MW capacity in the western region. [Text] [BK220926 Delhi Domestic Service in English 0830 GMT 22 Feb 81]

CSO: 5100

JAPAN

BRIEFS

NUCLEAR WASTE DUMPING SUPPORT--Tokyo, 20 Feb (KYODO)--The government decided at a Cabinet meeting Friday to continue its efforts to persuade South Pacific nations to support Japan's plan to discard low-level radioactive wastes in the South Pacific. The government made the decision when Cabinet ministers conferred regarding the United Nations' third meeting on Law of the Sea opening in New York on March 9. In the Cabinet meeting, Hyosuke Kujiraoka, director general of the Environment Agency, pointed out the importance of measures to cope with oil contamination of the sea, while Labor Minister Masayuki Fujio said Japan should further explain the safety of the planned abandonment of radioactive wastes to South Pacific countries to try to persuade them. Ichiro Nakagawa, director general of the Science and Technology Agency, also said Japan should seek South Pacific nations' understanding of an international pact under which Japan plans to discard radioactive wastes in the Mariana Sea area 4,000 meters deep. [Text] [OW200331 Tokyo KYODO in English 0318 GMT 20 Feb 81]

CSO: 5100

BRIEFS

STATEMENT ON NUCLEAR TREATY--Cairo, 22 Feb (MENA)--The Egyptian Foreign Ministry today issued a press statement on the occasion of President Anwar al-Sadat's endorsement of the nuclear weapons nonproliferation treaty. The statement stresses that the president's endorsement of the nuclear weapons nonproliferation treaty, after completing the constitutional measures in its regard, is considered an important step by Egypt toward the stabilization of security and peace in the region and toward opening the horizons of nuclear technology for the prosperity and welfare of the Egyptian people and the realization of their hope for economic and social progress. The statement says: Egypt's endorsement of the nonproliferation treaty confirms Egypt's commitment to the Middle East region becoming a nuclear weapons free zone, a matter which the UN General Assembly has unanimously approved on the basis of an Egyptian initiative that was approved by all states in the region. This positive step by Egypt aims at avoiding the useless dissipation of the scientific and human potentials of this region that has suffered long from the calamities of wars and disputes and at avoiding dragging it to the nuclear arms race which would threaten its peoples with the worst consequences. Egypt will immediately hold intensive contacts with several states to reap the fruits of this step in the field of the peaceful utilization of the nuclear energy. [Text] [NC221453 Cairo MENA in Arabic 1355 GMT 22 Feb 81]

CSO: 5100

BRIEFS

ATOM EXPERTS TO IRAQ--Paris (Special for DAVAR)--A large team of experts from the "French Agency for Atomic Energy" was sent to Iraq to take speedy action on ending the delay in setting up the nuclear reactor. This was reported by the (W.S.D.) magazine here yesterday. At the same time the French magazine discloses that Iraq promised to increase its oil supply to France by up to 60,000 barrels as of the beginning of April. Iraq is France's second biggest oil supplier after Saudi Arabia. The Osirak nuclear reactor was damaged at the beginning of the Iran-Iraq war by a mysterious aerial bombing. The Iranians claimed that the planes they used for the bombardment were of the Phantom type. Following this the French evacuated most of their experts from Iraq and only a small maintenance group was left behind. However, the Iraqis exerted pressures on France to resume the building of the nuclear reactor so that they can start operating as soon as possible. [Text] [TA201008 Tel Aviv DAVAR in Hebrew 20 Feb 81 p 2]

CSO: 5100

BRIEFS

EGYPT'S RATIFICATION OF NUCLEAR TREATY--The Foreign Ministry spokesman said Egypt's ratification of the nuclear nonproliferation treaty is an important internal step for Egypt. In answer to a question from reporter David Essing, the spokesman said nuclear nonproliferation is not a bilateral question. Rather, it should be dealt with through negotiations in a regional framework among nations in the area. The aim should be to establish a nuclear weapons free zone. Israel is interested in establishing such a zone and made this clear at the United Nations last year. The spokesman went on to say that Israel had not signed a nonproliferation treaty because it did not provide adequate inspection guarantees. The spokesman refused to comment on the agreement to sell two French nuclear reactors to Egypt. [Text] [TA171244 Jerusalem Domestic Service in English 1200 GMT 12 Feb 81]

CSO: 5100

SOUTH AFRICA TO SUPPLY URANIUM, OTHER MATERIALS TO TAIWAN

Johannesburg DIE TRANSVALER in Afrikaans 10 Jan 81 p 3

[Article by Berna Maree: "South African Nuclear Contributions Considerable; Minister De Klerk Says: Strengthen Ties with Taiwan"]

[Text] The long-term contract as a result of which, in the energy field, South Africa will be supplying 4,000 tons of uranium to Taiwan in the period between 1984 and 1990 should be providing considerable contributions to that country's nuclear fuel requirements. South Africa will also see to it that Taiwan gets a sufficient amount of its coal exports.

This was the statement made yesterday by the minister of minerals and energy affairs, F.W. de Klerk, in the course of a meeting of picked businessmen, government officials and community leaders in Taipei, the capital of the Republic of China, where he is now on a visit.

Trade ties between Taiwan and South Africa are getting stronger. The total trade amounting to 182 million rand an 1979 shows a remarkable increase of 50 percent compared to the 120.6 million rand of 1978. Presumably the figure for 1980 will show a further jump of 40 percent to a total of 250 million rand, according to De Klerk.

In 1978, South Africa had already become Taiwan's biggest supplier of minerals in the area of ferrochrome and asbestos at which time 89 percent of ferrochrome and 45 percent of asbestos were exported to that country. During the same year, 17 percent of Taiwan's iron ore and 13 percent of its chrome were also provided by South Africa.

These statistics clearly indicate the possibilities that exist for Taiwan to obtain its future supplies of minerals from South Africa, while South African industries can also find considerable advantage in their factory-made goods from Taiwan.

The production figures for more than 50 different minerals in South Africa are expected to exceed the 15-Billion-rand mark in 1980. This is the highest figure which has been attained thus far and is 58 percent higher than the figure for 1979. Gold was once again the leader with nearly 60 percent of the total value of all mineral production.

South Africa is also in the fortunate position of being more than 70 percent self-sufficient in its total energy consumption and almost 100 percent self-sufficient in its electricity requirements.

South Africa's coal exports are now higher than 24 million tons per year. The further expansion of port facilities at Richards Bay to make provisions for exporting 44 million tons annually have been announced, according to De Klerk.

South Africa is not only willing to keep on maintaining its reputation as a reliable exporter, but it also wants to continue expanding on this. In order to increase its exporting capabilities in the area of minerals and energy, it is, however, dependent on reliable trade partners, stated De Klerk.

Taiwan has one of the fastest-growing economies in the world with a present growth rate of over 10 percent per year. The country's processing industries and manufacturing abilities are envied by many of the great industrial countries.

"South Africa and Taiwan need each other. We have considerable possibilities for the exchange of trade and technological expertise and also for joint projects. South Africa's well-deserved recognition as a stable supplier of minerals and metals and the basic materials which Taiwan needs for its 12-point economic development program, undoubtedly entails countless opportunities for much stronger future trade ties and the exchange of technical know-how," said De Klerk, who concluded by saying: "Let us confidently strengthen the already existing bonds even further."

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BRIEFS

NUCLEAR REACTOR PRODUCTION--Moscow, 19 Feb (TASS)--The collective of the Volgadonsk atomic machine building plant (Russian Federation) has completed welding and mechanical operations on the first reactor body with a capacity of 1 million kilowatts. The beginnings have been laid for series production of equipment for atomic power stations. In the eleventh quinquiennium 1981-85 it is planned to put into operation 24-25 million kilowatts of new capacities at atomic power stations in the Soviet Union. Atommash is called upon to play a big part in the implementation of this important national economic task. [Text] [Moscow TASS International Service in Russian 1457 GMT 19 Feb 81 LD]

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BRIEFS

RADIOACTIVE WATER INTO SEA--Porvoo (HS)--Deficiencies have been noted in the systems for handling radioactive water at both the Loviisa and Olkiluoto nuclear power plants, at which leaks have occurred--from Loviisa even into the sea--it is reported in the most recent quarterly report, July-September, of the Radiation Safety Institute. The Radiation Safety Institute's report does not, however, specify any instance which would have essentially affected plant safety or caused danger to the plant personnel or residents in the neighborhood. During July-September, only the first unit of Industrial Power's Olkiluoto plant was in operation. Loviisa-1's annual maintenance was continuing during the whole period of observation, and similarly Loviisa-2 was still being prepared to begin operation. TVO's second unit was shut down in order to increase its power until the beginning of October. On 11 August there was an overflow at the Loviisa plant in the water-handling system of the primary or radioactive area, as the result of which a small amount of radioactive water reached the sea. The activity of the water was only 5 mCi units, or only one-thousandth of the permitted annual release. The water came from Loviisa-1. It went through the pipes to the Loviisa-2 system, and from there as an overflow into the sea. After the overflow, changes were made in the pipes to prevent pumping from one plant to the other. An overflow of 100 cubic [meters] occurred on 27 September at Olkiluoto as the result of a broken gasket in the liquid-waste handling system at TVO-1. The total activity of the leaked water was 60 mCi units. The water stayed inside the area, however, and did not cause a release of any radioactive materials into the environment, and no health hazard was caused to plant personnel. So that such large amounts of water cannot leak out in the future, the waste-containing rooms will be provided with an alarm system that will give sufficiently early notice of water that has possibly leaked to the floor. [Text] [Helsinki HELSINGIN SANOMAT in Finnish 10 Jan 81 p 7] 9611

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FRANCE

FUTURE OF FRENCH NUCLEAR FUEL REPROCESSING DISCUSSED

Paris CEA NOTES D'INFORMATION in French Sep 80 pp 13-15

[Speech delivered by Jean Lefevre, assistant to the deputy for nuclear energy applications of the Atomic Energy Commissariat, at the international conference on nuclear fuel held in Amsterdam 14-17 September 1980; passages enclosed in slantlines printed in boldface]

[Text] Necessity for Reprocessing in France's Energy Position

France's energy position can conveniently be defined in terms of three figures:

--3 percent of world energy consumption;

--0.7 percent of the world's energy production;

--0.11 percent of the world's known reserves of energy.

Available reserves of [illegible] own are thus plainly inadequate by comparison with our needs. To satisfy the growing demand, France has only very limited reserves of fossil fuels: 440 Mtep [equivalent petroleum megatonnage], which represents about 2 years of French consumption. This situation locks the country into close dependence on the producers of fossil fuels: in 1979 we imported 75 percent of our energy and in particular, 99 percent of the oil consumed. Despite major efforts to limit this consumption, the tab to be paid reached 14 percent of the total of our imports in 1979. It seems clear that only a new source of energy is capable of replacing oil in the short term and medium term in France; this would be nuclear energy applied to development of the PWR [pressurized-water reactor].

But would it be possible, in the longer term, to satisfy the nation's needs exclusively by development of these PWR reactors?

One must keep in mind that one of the major reasons for launching the nuclear program was to preserve national independence. So the country could not allow the substitution of uranium dependence for oil dependence. This obstacle can be overcome if we take into account the fact that breeder reactors make it possible to utilize natural uranium in an optimal way: one ton of this metal burned in a rapid reactor in fact supplies 60 to 80 times more energy than if it is burned in a light water reactor.

These two imperatives, development of the PWR line and development of the breeder reactor line, require, as you might think, full understanding and mastery:

--of the reprocessing of graphite-gas and light water to supply the breeder bed during the initial period,

--of reprocessing the "rapid" fuels so as to be able to complete the cycle.

The fast track, moreover, utilizes not one but two byproducts coming from thermal reactors: spent uranium, of no use otherwise, coming from the enrichment facilities and graphite-gas reactors, and the plutonium formed in the spent fuel.

Benefits of Reprocessing

This program, however, is not the only incentive advanced for reprocessing; the factors of security and safety should be invoked.

Reprocessing extends to a sorting out of radioactive materials contained in the fuel which permits:

--The elimination of most of the long-lived radionucleides "uranium and plutonium isotopes" by recycling them in nuclear reactors;

--Improvement of arrangements for containing the remaining elements, adapted to the period of duration of those radioactive elements.

It must be recalled that the number and quality of the barriers interposed between the radioactive material and the environment, for long-term storage, must be identical for assemblages of unreprocessed fuels and for isolated waste material after reprocessing. Because of the dimensions of the spent assemblages, establishment of such barriers raises complex problems, the solution of which entails the use of difficult techniques.

Also, the chance of going critical, which is almost nonexistent in the case of vitrified waste, is not negligible in the case of irradiated fuels.

With respect to the risk of proliferation, if the diversion of fissionable material locked in nuclear waste is scarcely conceivable, it is not so when we come to the storage of irradiated fuel. Since this fuel has a high content of fissionable material, measures must be taken to maintain appropriate protection during the entire lifespan of the storage site, and these measures are especially important and complex where the sites are numerous and scattered.

French Reprocessing Experience

With this preface, and knowing that Mr Zuhlke, the URG [United Reprocessors GmbH] representative, is presenting the primary results of French production campaigns, I will try to underline the role played by research and development in France, emphasizing especially the effort devoted to the reprocessing of rapid fuels. The only process which is applied and researched at present is the PUREX process, though a modest effort is being kept up on the dry method, which remains promising. The research and development units of CEA directly employ 1,000 people currently, not counting general services such as security, administration, etc. That effort has grown significantly in the last 4 years in order to be able to satisfy needs linked to the realization of future large industrial units.

Concerning the reprocessing of rapid fuel, we must keep in mind that CEA has long experience in the laboratory (Fontenay's armored cells) and pilot installations:

--The At-1 facility of La Hague has functioned remarkably well for 10 years (1969-1979) with a nominal capacity of 1 kg per day; it has treated 1.1 tons of "Rapsodie" and "Rapsodie-Fortissimo" fuels (rate of combustion 40,000 to 130,000 MW/days per ton: the "Rapsodie" cycle has been completed several times. This installation has also reprocessed 150 kg of "Phenix": fuel from core 1 as an experiment;

--The Marcoule (SAP) pilot facility has successfully reprocessed rapid fuel since 1975, its capacity being between 10 and 30 kg per day depending upon the plutonium content: up to now the SAP installation has reprocessed 6 tons of rapid fuel including:

--50 kg of "Fortissimo" fuel (rate of combustion 76,000 MW/days per ton) with a recooling period of between 6 and 17 months;

--2,600 kg of UO2-enriched "Phenix" fuel core 1 (1979); 220 kg of "Phenix" fuel core 2 (1979); 840 kg of "Phenix" fuel core 2 (1980).

Part of this fuel has made it possible to finish the "Phenix" cycle in 1 year, from delivery of the irradiated fuel to charging the fuel fabricated with the help of the plutonium thus recovered.

It must be noted too that 2.1 tons of "Phenix" fuel have been reprocessed, by dilution with graphite-gas fuel in the UP-2 factory of La Hague.

These various processing operations are summarized in the chart which follows.

[Chart on following page]

1 Expérience française du retraitement des combustibles rapides

2 Réacteurs	3 Composition initiale U/U + Pu % (cœur)	6 AT. 1 (La Hague)			5 SAP (Marcoule)		
		4 Quantité kg U + Pu	7 GWj/t Oxyde cœur	8 Temps de refroidissement (mois)	9 Quantité (kg) U + Pu	10 GWj/t Oxyde cœur	11 Temps de refroidissement (mois)
12 Rapsodie (1er cœur)	25	250	40-55	6-12			
13 Rapsodie Fortissimo	30	658	50-120	5-24	50	14-76	6-17
14 Phénix U enrichi	Ue				2 600	38-45	13-33
15 Phénix Pu - cœur 1	18	177	8-44	18	150	37	10-30
16 Phénix Pu - cœur 2	25				1 060	36-51	14

17 Phénix Pu cœur 1 retraité à UP. 2 (HAO) La Hague
quantité (kg) : 2 120
GWj/t oxyde : 21-42
temps de refroidissement (mois) : 38-50

KEY:

1. French experiments in rapid fuel reprocessing
2. Reactors
3. Initial composition ratio of uranium to uranium plus plutonium (core)
4. Quantity of U + Pu in kg
5. SAP (Marcoule)
6. AT-1 (La Hague)
7. Gigawatt-days per ton oxide core
8. Recooling time (months)
9. Quantity of U + Pu in kg
10. Gigawatt-days per ton oxide core
11. Recooling time (months)
12. Rapsodie (core 1)
13. Rapsodie Fortissimo
14. Phenix enriched uranium
15. Phenix plutonium - core 1
16. Phenix plutonium - core 2
17. Phenix plutonium core 1 reprocessed at UP-2 (HAO) La Hague: quantity (kg), Gigawatt-days per ton oxide, recooling time (months)

In order to complete and strengthen existing means, the TOR project was launched, the aim of which is:

--To bring up the capacity of the Marcoule pilot installation (2.3 tons per year in 1981) to around 5 tons per year, thereby permitting the reprocessing of "Phenix" fuel with the associated possibility of processing some fuels coming from foreign sources.

--To augment the reliability of the installation and to improve research and development capability by permitting experimentation with the apparatus contemplated for future industrial installations.

Program and Research Rasults in Reprocessing of Rapid Fuels

We have been able to significantly improve reprocessing conditions, in the following ways among others: conditions of dissolution which permit us to significantly reduce the time of the operation; the unfolding of the process as it concerns plutonium, which has enabled us to reduce plutonium losses by a factor of 4 or 5 and thus reduce them to a very low level.

The basic parameters conditioning reprocessing of rapid fuels are thus:

--The plutonium content of the mixed oxide. The direction to be taken in development of this line must take into account this factor of the ratio of plutonium to the total of uranium plus plutonium with the object of preserving the good results obtained with the "Phenix" fuel.

--The quality of manufacture of the mixed oxide. The importance of this parameter has been shown by foreign laboratories (cf. Dounreay conference in May 1979).

The research and development program is principally focused on the basic solutions involved in the PURR project, which follows the TOR project.

Mechanical Processing

--Separation from top to bottom, opening of the hexagonal tube, liberation and manipulation of the aiguilles [translation unknown], eventual removal of the spacing wire, shearing of the aiguilles.

Dissolution

--Continuation of acquisition of data on the kinetics of fuel dissolution, on the quantity and characteristics of insoluble products, on the behavior of fissionable gas and ruthenium, on the behavior of sheathing materials;

--Development of continuous, steady-shaped dissolving agents with active experimentation in the TOR installations.

Clarification

--The basic solution is the centrifuge operation, but other processes are being developed, given the special importance attached to insoluble products in the reprocessing of rapid fuel.

Extraction

--Most research and development on this part of the process goes along with what is being done on the light water track, with however the particular constraints imposed with a quite different ratio of plutonium to uranium.

Elaboration of Plutonium Oxide

--This problem is being attentively examined given the importance of plutonium supply in a rapid fuel facility.

Treatment of Wastes

--With respect to solid waste, the basic processes are cementation of envelopes and the incorporation in a verre des fines [translation unknown];

--For the other liquid and gaseous wastes and effluents, the treatment processes provided for the "light water" facilities are used, with several adaptations;

--vitrification of highly active effluents,

--trapping of the iodine in the form PbI_2,

--incineration,

--distillation of the solvents,

We are trying to reduce to the greatest extent possible effluents of medium to minor activity, particularly by recycling.

/The French reprocessing program is closely tied to the reactor development program. Such integration requires very long preparation, including several stages of development, from the research and development level all the way to industrial units, and along the way demonstration units, pilot units, and prototypes.

/It must be recalled that the time necessary for the construction of a large reprocessing plant (procedure, engineering, construction, start-up) is estimated at about 8 to 10 years, about the same time as that needed for development of a pilot or demonstration unit. This makes one aware of the effort required to reach the industrial stage within the time prescribed.

/Certainly it is only at the industrial stage that the final data are obtained from experience, thereby providing for industrial mastery of the exploitation process. It is in awareness of these facts that we have decided within the framework of the two programs of "light water" and "rapid" reprocessing to launch, as soon as possible, the development, under reasonable economic conditions, of units with the maximum capacity compatible with the tonnages of irradiated fuel that can be obtained to supply them./

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